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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/575,464	04/12/2006	Tetsuo Tanaka	Q93331	3204

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EXAMINER	
KITOV, ZEEV V	

ART UNIT	PAPER NUMBER
2836	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Supplemental Notice of Allowability	Application No. 10/575,464	Applicant(s) TANAKA ET AL.	
	Examiner Zeev Kitov	Art Unit 2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *4/12/06*.

2. ☒ The allowed claim(s) is/are *7 - 12*.

3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☒ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date *11/01/07* .
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

DETAILED ACTION

REASONS FOR ALLOWANCE

The following is an examiner's statement of reasons for allowance:

An independent Claim 7 discloses, inter alia, following: a drive circuit of a direct-current voltage-driven magnetic contactor including an operating coil, a main contact that is in an open circuit condition in an attracting period of an initial period of excitation by the operating coil and is in a closed circuit condition in the following holding period, and an auxiliary contact that carries out a reverse opening and closing operation from the main contact is connected to a positive electrode side of the power supply and the other end of the same is connected to one end of the auxiliary contact, the drive circuit including: a starting semiconductor switching element provided between the other end of the auxiliary contact and a negative electrode side of the exciting direct-current power supply; a direct-current voltage detecting circuit that outputs a start instruction signal when an applied voltage of the exciting direct-current power supply has exceeded a predetermined value; a charging capacitor whose one end is connected to a positive electrode sine of the driving direct-current power supply via a diode and whose other end is connected to the other end of the auxiliary contact; and a current limiting semiconductor switching element connected in parallel to the auxiliary contact.

Following references are considered closest, which in combination disclose some of the elements of the claim Nishiwaki et al. (US 5,416,665), Uota et al. (US 5,202,813) and Xu (US 6,169,431).

Regarding Claim 7, Nishiwaki et al. disclose following: a drive circuit of a direct-current voltage-driven magnetic contactor including an operating coil (141 in Fig. 1) capable of direct-current excitation. The operating coil is connected between two transistors (11 and 12 in Fig. 1) rather than between the power supply and the terminal of the upper transistor, as claimed. However, the operating coil is a part of a series circuit including two transistors and the coil and therefore a rearrangement of its position in the series circuit is obvious.

It further discloses the drive circuit comprising: a starting semiconductor switching element (12 in Fig. 1) provided between the operating coil and a negative electrode of the power supply. It further discloses a driving direct-current power supply whose negative electrode side is connected to the negative electrode side of the exciting direct-current power supply 203 in Fig. 3). It further discloses a first drive circuit (28 in Fig. 1) forcing the starting semiconductor (12 in Fig. 1) to switch ON upon receiving the start instruction signal (S0 in Fig. 1), using the driving direct-current power supply (3 in Fig. 1) as a source of power. It further discloses a current limiting semiconductor element (11 in Fig. 1) connected in series with the starting semiconductor (12 in Fig. 1). It further discloses a second drive circuit (25, 14 and 15 in Fig. 1) driving the current limiting semiconductor switch (11 in Fig. 1) to perform a switching operation.

The main contact that is in an open circuit condition in an attracting sub-period of an initial period of excitation of the operating coil and is in a closed circuit condition in a holding period is inherent in Nishiwaki et al. system.

However, it does not disclose two periods of excitation. Uota et al. disclose similar system having an attracting period of an initial period of excitation by the operating coil and a subsequent holding (Fig. 9).

Nishiwaki et al. further do not disclose a direct-current power supply voltage detecting circuit. Xu discloses control signal generating circuit including the direct-current power supply voltage detecting circuit (D1, 30 and Q1 in Fig. 1), which upon application of the power to the circuit when the voltage across capacitor (30 in Fig. 2) exceeds a predetermined value (sufficient to drive Q1 and MOSFET in Fig. 1) makes possible activation of NMOS driving transistor (P1 in Fig. 1). It further discloses activation by a control signal generation device (10 in Fig. 1). It further discloses a capacitor (30 in Fig. 1) with one terminal connected to a positive terminal of the power supply via a diode (D1 in Fig. 1) and another terminal connected to the emitter of the current limiting semiconductor element (P1 in Fig. 1). In the Nishiwaki circuit modified according to teachings of Xu the detection of sufficient voltage will send signal to controller.

However, following elements of the claim have not been disclosed in the prior art of the record: an auxiliary contact that carries out an opening and closing operation that is reverse with respect to the main contact, and a current limiting semiconductor switching element connected in parallel to the auxiliary contact.

As per another independent Claim 10, it recites in rephrased form a similar limitation regarding an auxiliary contact and associated circuit.

Allowability resides, at least in part, in the above-described limitations, which has not been disclosed in the Prior Art in a search.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zeev Kitov whose telephone number is (571) 272-2052. The examiner can normally be reached on 8:30 – 5:00. If attempts to reach examiner by telephone are unsuccessful, the examiner's supervisor, Michael Sherry can be reached on (571) 272 – 2800, Ext. 36. The fax phone number for organization where this application or proceedings is assigned is (571) 273-8300 for all communications.

Z.K.
11/19/2007

11/26/07

MICHAEL SHERRY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800